

BMW · POWERTRAIN

P1116

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1116 · BMW

Mass Or Volume Air Flow Circuit Range Performance Problem Bank 2

P1116 on BMW vehicles indicates that the engine control module (DME) has detected a performance problem with the mass or volume air flow circuit for bank 2, meaning the signal from the bank 2 mass air flow (MAF) sensor is outside the expected range or inconsistent with other engine data. The computer compares the MAF sensor reading against throttle position, engine speed, and bank 1 air flow to determine that bank 2 is not delivering a plausible air mass value.

SYSTEM

Powertrain

CODE TYPE

BMW specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Rough idle or uneven running, especially when the engine is cold.
- Reduced engine power or limp mode under acceleration.
- Poor fuel economy or black smoke from the exhaust due to rich running.
- Hesitation or stumble during light throttle application.
- In some cases, the engine may stall or have difficulty starting.

Common causes, most likely first

- 1 Contaminated or failed bank 2 mass air flow sensor.
- 2 Intake air leaks between the MAF sensor and the throttle body on bank 2.
- 3 Wiring damage or poor connection at the bank 2 MAF sensor connector.
- 4 Clogged or restricted air filter or intake tract on bank 2.
- 5 Faulty bank 2 MAF sensor signal circuit or ground circuit.
- 6 Engine vacuum leaks affecting bank 2 air flow measurement.
- 7 Rarely, a software issue or faulty DME requiring reprogramming.



How to diagnose and fix it

- 1 Use a scan tool to read live data from both bank 1 and bank 2 MAF sensors and compare readings at idle and under load.
- 2 Visually inspect the bank 2 MAF sensor, its connector, and the intake tubing for cracks, loose clamps, or contamination.
- 3 Check the air filter and intake tract for blockages or restrictions on bank 2.
- 4 Perform a smoke test to detect intake leaks on bank 2.
- 5 Measure resistance and voltage on the bank 2 MAF sensor circuits to rule out wiring faults.
- 6 Clean the bank 2 MAF sensor with approved MAF cleaner and re-test; replace if readings remain implausible.
- 7 After repair, clear the fault memory and perform a road test to verify the code does not return.

Bank 2 MAF Sensor Diagnostics

- A common mistake is replacing the bank 2 MAF sensor without first checking for intake leaks, which can mimic a sensor failure and cause the new sensor to set the same code.
The DME may set P1116 even when the MAF sensor is functioning, if the bank 2 air flow is skewed by a leaking intake manifold gasket or a stuck-open crankcase ventilation valve.
- On some BMW engines, a dirty bank 2 MAF sensor can be cleaned successfully, but only if the contamination is oil or dust; cleaning will not fix a failed hot film element.
- P1116 is often accompanied by mixture adaptation faults on bank 2, so always check fuel trim data to confirm whether the problem is air flow related or a fuel delivery issue.
A faulty bank 2 MAF sensor can cause the DME to default to calculated air flow, leading to reduced performance and higher emissions without triggering other codes immediately.

Can I keep driving with P1116?

You can drive the vehicle with P1116, but avoid heavy acceleration and prolonged driving because the engine may run rich or lean, potentially damaging the catalytic converter over time. Have the fault diagnosed promptly to prevent worsening performance and emissions.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Smoke machine for intake leak testing
- MAF sensor cleaner
- Basic hand tools (screwdrivers, socket set)



Reading P1116

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (BMW): its meaning depends on the make.
- 1** Fuel and air metering.
- 16** The exact fault within that area.

Often seen with

P1115 Oxygen Sensor Heater Circuit Short To Ground Bank 1 Sensor 1 · **P1106** Oxygen Sensor Circuit Bank 2 Sensor 1 Voltage Too Low/Air Le · **P1106** Engine Torque Control Signal 2 Circuit Malfunction · **P1115** Engine Torque Control Cut Signal Circuit High Input · **P1106** BARO Circuit Range Performance Malfunction · **P1115** H02S12 Heater Circuit Low Voltage · **P1106** BARO Circuit Range Performance Malfunction · **P1106** MAP Sensor Circuit Voltage Intermittent · **P1115** Engine Coolant Temperature Sensor Intermittent · **P1106** Dual Alternator Lower Fault Manifold Absolute Pressure (MAP) · **P1115** Intake Air Temperature B (IAT2) Circuit High Input · **P1106** MAP Sensor Circuit Intermittent High Voltage · **P1115** Engine Coolant Temperature (ECT) Sensor Circuit Intermittent · **P1115** Coolant Temperature Sensor Plausibility · **P0101** Mass/Volume Air Flow Circuit Range/Performance · **P0175** System Too Rich (Bank 2) · **P0172** System Too Rich (Bank 1)

See it working

Watch the animated explainer [How Variable Valve Timing Works: Cam Phaser and VVT Solenoid](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1116/>

